

Algebra IB
Unit 4 Practice Test

Name:
Date:

Exponent Rules

Simplify. Express your answer in positive exponents only.

1. $5x^2 \cdot x^5 \cdot x^3$ $5x^{10}$	2. $(4x^6y^3)(3xy^4)$ $12x^7y^7$	3. $\frac{a^0y^6}{y^8}$ $\frac{1}{y^2}$
4. $(3a^4b)^2$ $9a^8b^2$	5. $\left(\frac{a^2b^{-1}}{c^4}\right)^3$ $\frac{a^6}{c^{12}b^3}$	6. $2(ab)^{-5}$ $\frac{2}{a^5b^5}$

Adding and Subtracting Polynomials

Add or subtract the following polynomials. Be careful with subtraction!

7. When I add or subtract polynomials, I combine Like terms. When add or subtract only the coefficient changes, NOT the exponents.

8. $(2x^2 - 5x + 3) + (3x^2 + 7x - 5)$

$$5x^2 + 2x - 2$$

9. $(7x^2 - 5x + 8) - (5 + 2x^2 - 7x)$

$$5x^2 + 2x + 3$$

10. $4x^3 + 2x^2 + x + 1 - 5x^2 + 2x - 1$

$$4x^3 - 3x^2 + 3x$$

11. $(5x^3 + 1) - (4x^3 + x^2 + 3)$

$$x^3 - x^2 - 2$$

Distributing Monomials

Apply the property of distribution to each polynomial.

12. $2(3x^2 - 5x + 7)$

$$6x^2 - 10x + 14$$

13. $4x(x^2 + 1)$

$$4x^3 + 4x$$

14. $8x^2(3x^2 - 5x + 7)$

$$24x^4 - 40x^3 + 56x^2$$

Factoring

Factor out the greatest common factor from each polynomial.

15. $16x^3 + 24x^2 - 32x$

$$8x(2x^2 + 3x - 4)$$

16. $14xy^3 + 7x^3y^2 - 56x^6y^4$

$$7xy^2(2y + x^2 - 8x^5y^2)$$


17. $3x^3 - 9x^2 + 27x$

$$3x(x^2 - 3x + 9)$$

Multiplying Binomials

Multiply the two binomials using distribution, the box method, or FOIL.

18. $(x+3)(x-5)$


$$x(x+3) - 5(x+3)$$

$$x^2 + 3x - 5x - 15$$

$$x^2 - 2x - 15$$

19. $(3x+5)(x-1)$

$$x(3x+5) - 1(3x+5)$$

$$3x^2 + 5x - 3x - 5$$


$$3x^2 + 2x - 5$$

20. $x(x-2)(x-1)$

$$x(x^2 - 3x + 2)$$

$$x^3 - 3x^2 + 2x$$

21. $(x+4)(x+3)$


$$x^2 + 3x + 4x + 12$$

$$x^2 + 7x + 12$$

22. $3(x+6)$

$$3x + 18$$

23. $2x^2(3x+5)$

$$6x^3 + 10x^2$$

24. $(x+2)(x^2+4x+6)$

$$x^3 + 2x^2 + 4x^2 + 8x + 6x + 12$$

$$x^3 + 6x^2$$

Factoring Trinomials

Factor each trinomial into two binomials using the sum-product X puzzle. Be sure to give the final answer, not just the puzzle.

25. $x^2 + 2x - 48$

$$(x+8)(x-6)$$

26. $x^2 - 12x + 20$

$$(x-10)(x-2)$$

27. $x^2 - 10x + 21$

$$(x-7)(x-3)$$

28. $6x^2 - 7x - 3$

$$6x^2 - 9x + 2x - 3$$

$$3x(2x-3) + 1(2x-3)$$

$$(2x-3)(3x+1)$$

29. $14x^2 - 9x + 1$

$$14x^2 - 7x - 2x + 1$$

$$7x(2x-1) - 1(2x-1)$$

$$(2x-1)(7x-1)$$

30. $6x^2 - 13x - 5$

$$6x^2 - 15x + 2x - 5$$

$$(3x+1)(2x-5)$$